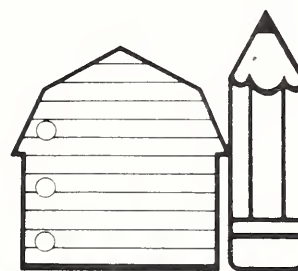


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Notes

United States
Department of
Agriculture



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A bi-monthly newsletter for the AGRICULTURE IN THE CLASSROOM program. Sponsored by the U.S. Dept. of Agriculture to help create greater awareness about agriculture for students in grades K-12. For information, contact: Shirley Traxler, Director, Room 232-W, USDA, Washington, D.C. 20250. 202/447-5727

A Message to Students: There's a Place for You in the American Food System

By Dr. Orville G. Bentley, Assistant Secretary for Science & Education

If you like to explore or experiment, are intrigued by living organisms, and want to understand the molecular and cellular events that permit plants and animals to grow and develop, you may be interested in a career in agricultural research. Programs in the plant and animal sciences, biochemistry, soil chemistry and physics, entomology and integrated pest management, food science and food process engineering, meteorology, pre-veterinary medicine, and environmental science represent major areas of study which help you to understand:

- how to redesign plants and animals or resistance to environmental stresses, diseases, and insect pests;
- how to devise food processing methods that preserve nutritional quality while protecting against growth of disease-causing micro-organisms;
- the chemistry and physics of soil, water, plant and animal life, and their interactions, so that you can better preserve the quality of our environment.

If you like business, you can be in a strong position for success with professional preparation in agribusiness. Food is a basic and strategic product. With world-wide population expansion, business opportunities will continue to grow.

- Agribusiness is an important business. More

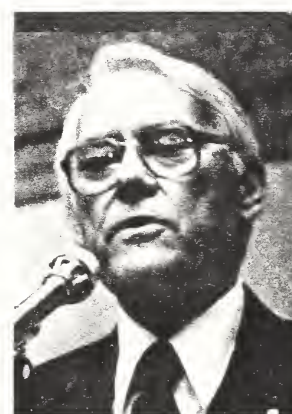
than 20 percent of the US gross national product is generated by our food production and delivery system. This system is important in the international market and is strongly affected by world-wide economic conditions.

- Agribusiness is dynamic. Professionals in agribusiness develop and use the latest technology and information to provide food and fiber efficiently while maintaining our natural resources.

If engineering and design as applied to biological systems or renewable resources appeal to you, you may be interested in agricultural engineering as a career:

- The effective use of natural resources and the efficient harvesting of crops require the design of machines and implements to handle sensitive natural products in large quantity with minimal damage and loss.
- The large-scale manufacture of food and fiber requires expertise in engineering principles as well as food chemistry and biochemistry.

No other US industry can compete with agriculture in terms of the diversity of career opportunities. No other industry offers a broader array of challenges associated with solving crucial problems. Exciting careers await future scientists and professionals striving to advance the frontiers of knowledge and technology related to the American food system.



Dr. Orville G. Bentley, Assistant Secretary for Science & Education, is in charge of research and education for the USDA, and is responsible for the direction of agricultural science and research in the United States.

New Booklet a Treasure-Trove of Science Fair Topics

The Agribusiness Institute of Florida has released a new 14-page booklet, *Agricultural Topics for Science Fair Projects*.

The booklet provides a wealth of project ideas for

students of science at the junior and senior high school levels.

The booklet was compiled by faculty members at

CONTINUED ON PAGE 3

National Conference
Coming Up

Mark Your Calendar

**Ag in the Classroom
National Conference**

June 9-10
Washington, DC

Look for Details in the
next issue of *Ag in the
Classroom Notes*

From the Director

Dear Readers,

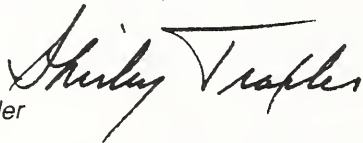
A Happy New Year to all! I hope 1986 brings you great happiness and satisfaction in your work and personal lives.

In the past, Ag in the Classroom efforts centered primarily on social studies and the humanities. In this issue of Notes, most of the articles focus on science and careers.

Today, our schools are also concentrating on science and mathematics. This trend provides an opportunity for us to encourage the study of agriculture. Clearly, it has been scientific know-how that has made American agriculture the most resourceful in the world.

As Assistant Secretary Bentley indicates in his message to students, there's a bright future in agriculture. Let's work together to make our students aware of the many possibilities that await them.

Shirley Traxler



P.S. A warm welcome to Hawaii and the Virgin Islands, joining the Ag in the Classroom network.

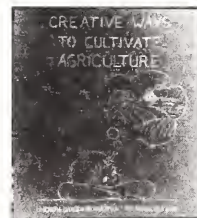


Library

For more information about the resources, contact:

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Creative Ways to Cultivate Agriculture in the Classroom

Marion Peterson
North Dakota Department
of Agriculture
State Capitol
Bismarck, North Dakota 58505

The Science Workbook

Dr. Ted Darrow
The College of Agriculture
Ohio State University
2120 Fyffe Road
Columbus, Ohio 43210

The Science Workbook

"Planning and conducting a science project can be a very exciting and rewarding way to actively participate in science," says Dr. Ted Darrow, Assistant Dean at the College of Agriculture, Ohio State University. "It may also help students to discover some future career opportunities."

Darrow is editor of *The Science Workbook*, a new compilation of research projects in food, agriculture and natural resources submitted by 53 faculty members of the OSU School of Agriculture.

Intended as a handbook for high school and middle school teachers and students, *The Science Workbook* can be used for demonstration in the laboratory and classroom.

"We look to promote the fact that the food, agricultural and natural resources sciences are, in essence, the practical application of the biological and physical sciences.

"We want to carry science beyond the book level and involve students in the 'doing' of science. It is important for them to have 'hands-on' experience with contemporary scientific problems."

The workbook is also a resource from which students can select topics for independent investigation. These can become projects presented at science fairs. The projects vary in level of difficulty

and accommodate both the average and the gifted student.

"To encourage active involvement of students in scientific inquiry is to develop their problem-solving skills," Darrow continues. "Research documents that hands-on, inquiry-oriented science courses enhance higher level intellectual skills — such as critical thinking, problem-solving, creativity and process skills — as well as giving a better understanding of scientific concepts."

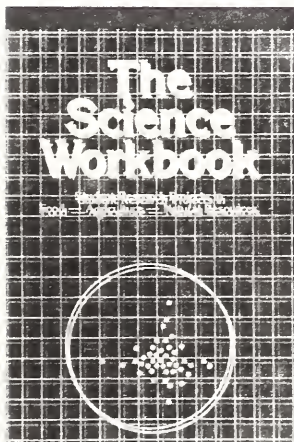
At this time, some 18,000 copies of *The Science Workbook* are in print.

Dr. Jim McCoy, Director of Undergraduate Student Affairs at the Penn State University College of Agriculture, believes the publication provides a tremendous opportunity to bring agriculture to the classroom.

"We are trying to get the brightest secondary school students to view agriculture as a viable science to study in college. *The Science Workbook* helps give the study of agriculture a foothold in the science community," says McCoy.

According to McCoy, Penn State has ordered 1,400 copies of the workbook to send to the science departments of all secondary schools and to school boards across the state of Pennsylvania. This action has been sponsored by the PSU College of Agriculture's Alumni Society.

See "Library" for more information.



CONTINUED FROM PAGE 1

the University of Florida's Institute of Food and Agricultural Sciences, located in Gainesville.

Agricultural Topics is divided into two parts. The first part lists the names and telephone numbers of nearly 40 agricultural scientists residing at the University of Florida who have offered to advise students and teachers using the booklet about science fair projects. The list is organized according to the areas of expertise of these various scientists — many of whom contributed directly to the booklet.

The second part outlines topics for possible science fair projects. Topics are arranged according to subject headings such as Agronomy, Animal Science, Botany, Home Economics, Poultry Science, and Veterinary Science.

In all, the booklet contains 126 suggested science fair projects.

Agricultural Topics was developed at the initiative of the scientists themselves, according to Art Darling, President of the Agribusiness Institute of Florida, and coordinator of Florida's Ag in the Classroom program.

In August 1985, the Agribusiness Institute distributed *Agricultural Topics* to all the science department heads in Florida's 750 public junior and senior high schools.

"There's a clear need for a book like this," says Darling. "Judging from the reception it's gotten, Florida's teachers perceive this need as clearly as anyone."

"*Agricultural Topics* is a tremendously valuable two-fold introduction for the high school student. One, it introduces the student to agriculture. Two, it teaches the student something about the scientific

Florida High Schoolers Conducting Ag-Oriented Science Projects

Science students at Hallendale High School in Florida are using ideas suggested by *Agricultural Topics* for Science Fair Projects to design some intriguing science projects.

Monica Bermeo, Grade 9, plans to study the effects of colored light on kidney bean plants.

"Will red or blue light increase the growth activities of the plants? If it does, this knowledge could be used in growing kidney bean plants on a large scale, and feed more people around the world."

Ramnarine Bholin, grade 10, proposes to examine what effects radiation might have on germinating seeds.

"Humans depend on the survival of plants in more ways than one," Bhdlin writes. "First of all, oxygen is produced by plants during photosynthesis. Without plants, there would be a shortage of oxygen. Secondly, all living things depend on plant life for food, directly or indirectly."

"Two sets of seeds will be germinated under the exact same conditions, except that one set will be exposed to radiation. The germination of the seeds is going to be observed to see if there is any difference when radiation is applied."

side of agriculture, and, in particular, about the employment and career avenues open within the scientific side of agriculture."

Free copies of *Agricultural Topics for Science Fair Projects* are available in limited quantities. See "Library."

Nebraska Teachers Take Course in Ag Appreciation

Twenty-eight Nebraska elementary and secondary school teachers spent several days last summer learning about their state's number one industry — agriculture.

In connection with Nebraska's Ag in the Classroom program, the teachers took part in farm tours and curriculum writing workshops.

During the four-day tour, the teachers learned about the food and fiber production system by observing various aspects of agriculture, including agribusiness, processing, marketing, research and conservation. They also got a first-hand look at production agriculture by staying overnight with farm and ranch families across the state.

Ranging from two to five days, the curriculum writing workshops provided the teachers with knowledge of the many resources available for raising awareness of agricultural issues in the classroom. The teachers also had the opportunity to talk with industry and commodity representatives, and developed instructional lessons to fit

their own programs.

Dr. Ozzie Gilbertson, head of the Department of Agricultural Education at the University of Nebraska — Lincoln, said the program emphasized the importance of agriculture to teachers who might not otherwise be exposed to it.

"We aren't teaching people how to teach farming. We want them to use a greater number of realistic examples based on agriculture in their everyday curriculum," said Gilbertson.

For participating in the workshop, the teachers received graduate credit from either the University of Nebraska — Lincoln or Kearney State College in Kearney, Nebraska.

The tours and workshops were sponsored by the Nebraska Department of Agriculture. Additional financial support was obtained from industry, commodity groups, and other agricultural organizations in Nebraska.

Similar programs are being planned for next summer.

Tour/Workshop Success Story: an Interview with Barb McCallum

Barb McCallum, a third grade teacher at the Belmont School in Lincoln, Nebraska, attended the 1984 Tour for Teachers/Curriculum Workshop and incorporated agriculture into her classroom for nearly four months during the 1984-85 school year. Ag in the Classroom Notes asked Barb about her experiences with the program.

NOTES: What was your first impression of the tour?

McMALLUM: The teachers were together and we started talking about how the information we were getting could be integrated into our curriculums. The more we talked and discussed, the more excited we got. In the first place, summer is the perfect time for this, for a teacher's mind is not cluttered. You are well rested from the classroom, so it's easy to get excited and think up plenty of ideas.

NOTES: What aspects did you enjoy most?

McMALLUM: I am a 'doing' person. I can learn to teach more effectively by doing, rather than listening or speaking. Thus, Ag in the Classroom was fantastic for me and my kids. I learned by doing on the tours, and through my excitement and enthusiasm was able to pass on the 'learning' to my students.

For myself, the most intriguing part of the tour was seeing the close-knit family ties and neighborliness that is a part of farming and ranching. It is such a family affair. Such closeness and companionship within a family was so neat, I wanted to pass that on to my kids.

NOTES: What's the number one selling point of Ag in the Classroom?

McMALLUM: It is a medium by which the children can get excited about any curriculum area! I think we have to get the kids excited about learning. If they come to school and there is something new and exciting for them, they'll actually get involved in the learning process. I'm here for the kids, and anything that can help them learn is something I want to be doing.

NOTES: How are you using Ag in the Classroom?

McMALLUM: It's amazing how Ag in the Classroom works in so well with our established third grade curriculum. I'm doing the same things I always have, just with agriculture in all of them.

For instance, our third grade science curriculum includes soil, seeds, how plants grow,

embryology, and the interaction of plants and animals. Look at that — that's all agriculture! And what better way to teach it than using the food chain and the farmer's role in it?

In social studies, we studied careers. Think how well studying the farmer can accomplish this. Think how many different hats the farmer has to wear: agronomist, machinist, veterinarian, et cetera. Just perfect for Ag in the Classroom.



NOTES: Has Ag in the Classroom improved your effectiveness as a teacher?

McMALLUM: [During the four months I used agriculture in my classroom], the kids listened better, because they were more interested. Ag in the Classroom was something that they hadn't experienced before. We did all kinds of activities, rather than a lot of pencil and paper things. We visited many places, and even had a tractor on the playground. They got to see and feel and smell and touch and taste all the actual things that related to agriculture.

NOTES: What were some of the students' reactions to Ag in the Classroom?

McMALLUM: One little boy had never told his mother anything about school. He came home one day and said 'Mom, I'm going to be a farmer.'

Another little boy went right home and called his grandfather long-distance to ask if he could go visit him on his farm. Prior to this, he had never cared one bit about either his grandfather or the farm.

Our basic goal is to make them more aware of agriculture and farming — how important it is to our economy in Nebraska and in the whole United States.

Barb McCallum lends a helping hand during an Ag in the Classroom activity.

Spotlight

Cultivating Agriculture in North Dakota Classrooms

One of the definitions of creativity is having the quality of something created rather than imitated. Bonny Berryman and Deborah Schultz illustrate this definition by giving us new and innovative ways to sow the seeds of inquiry in introducing *Creative Ways to Cultivate Agriculture in the Classroom*.

Produced by the North Dakota Department of Agriculture, the book is a 270-page loose-leaf binder that allows pages to be easily taken out as methods and techniques of farming change, or as facts and figures become outdated.

"*Creative Ways* is intended as a springboard to educate the students of our state about its most important business, agriculture," says Berryman. "We want teachers to be aware that they can bring agriculture to the classroom in an interdisciplinary approach, and sprinkle it with social studies, math, science, language study or art. We've designed separate lessons that can stand alone for teachers

that don't have the time to take part in two- or three-week workshops."

Many of the lessons feature interesting and informative anecdotes to stimulate student interest as the activity is introduced into the classroom. The background to one of the art activities, for example, explains that red became the standard color for barns because the materials from which red paint was made — red soil or clay mixed with linseed oil — were cheap and readily available.

Also, interspersed throughout the manual are poetry selections that reflect the influence agriculture plays in the past, present and future of North Dakota. Teachers are encouraged to use poems to explore agriculture through the affective domain: to study poetic devices such as metaphors, similes and alliteration; to develop choral reading; to illustrate agricultural scenes from the poems; and to stimulate students to write poetry about farming.

Creative Ways to Cultivate Agriculture in the Classroom has been sent to state departments of agriculture and state task forces across the nation.

For more information, see "Library."

The chart is a completed lesson from *Creative Ways*. Students are provided a list of related agricultural occupations. They then fill in the appropriate blanks.

CAREERS IN AGRICULTURE CATEGORY SHEET

FARMING AND RANCHING	SCIENCE AND RESEARCH	MANUFACTURING INDUSTRY	BUSINESS	TEACHING AND EDUCATION	COMMUNICATIONS	CONSERVATION AND RECREATION	SERVICES
beekeeper	agronomist	chemical producers	banking official	agriculture consultant	advertising agencies	anti-pollution programs	County Extension Agent
dairyman	bacteriologist	electric power plants	dairy plant manager	college faculty member	artist	commercial nurseries	Food and Agriculture Organization of United Nations
farm manager	biochemist	farm equipment specialist	elevator manager	food services	editor	farm irrigation systems	
farmer	biologist	fertilizer products	farm appraiser	home economist	lay-out specialist	flood control projects	Food Administration
fruit grower	biophysicist	seed grower	farm machinery dealer	rural sociologist	meteorologist	soil conservationist	Inspector (food or feed)
livestock breeder	botanist		farm planner	vocational agriculture	photographer	water conservation specialist	Missionary
poultryman	engineer		feed dealer		radio or television announcer	wildlife specialist	Peace Corp
rancher	entomologist		insurance broker		weatherman		Quality Control Specialist
	food chemist		salesmen		writer		United States Department of Agriculture
	horticulturist		seed broker				
	meteorologist		flying/spraying service realtor				
	research technician						
	scientist						
	veterinarian						
	zoologist						
	geologist						

The individuals listed here are key reference persons in each state. If you have any questions, want to make reports, or need more information about your state's Ag in the Classroom program, contact the following:

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